

REMARKS/ARGUMENTS

Currently amended Claim 1, previously presented Claims 4-15 and 21, and new Claim 22, are pending in the Application. Claims 2-3 have been canceled. The average particle diameter of currently amended Claims 1 and 22 and the excluded peak range limitations in new Claim 22 find explicit support throughout the Specification. The “average particle diameter of less than 0.3 μm ” in currently amended Claim 1 and new Claim 22 is found in the Specification at pages 46, 48, 51, and 57. “[N]ot having a peak within a range of from 7.4° to 9.3°” in new Claim 22 is found in the Specification at pages 12, 15, 16, 19, 31, 40, 57, 83, 85, and 90.

No new matter has been added.

Applicant appreciates the Office’s withdrawal of the prior rejections under 35 U.S.C. § 102(e)/103(a) over Sugino (U.S. 6,853,823) and for obviousness-type double patenting (Office Action (OA), dated November 26, 2008, ¶4).

Rejection of Claims 1, 4-15, and 21 under 35 U.S.C. 112, 2nd ¶

The PTO concludes that exclusion of “a peak within a range of from 7.3° to 9.4°” is indefinite because a peak at 7.3° on the low angle side and a main peak at 9.4° are required by independent Claims 1 and 21 (OA, ¶¶ 6-7). Persons having ordinary skill in the art would have understood that the phrase “within a range of 7.3° to 9.4°” means between 7.3° to 9.4°. The PTO appears to have understood that meaning of the phrase when comparing Niimi’295’ disclosure (OA, p. 13 (“no peaks between 7.3° and 9.4° . . . See Fig. 8.” A person having ordinary skill in the art similarly would have understood the scope of the claims.

The PTO has not explained why persons having ordinary skill in the art would not have understood the full scope of the subject matter claimed. Applicant’s Figure 9 informs one skilled in the art, and Applicant’s Synthesis Example 1 (Spec., pp. 83-85) and Table 1 (Spec., p. 90) consistently show, that there are peaks at 7.3° and 9.4° with no peaks between

the peaks at 7.3° and 9.4°. Claims are to be read in light of the supporting specification. Moreover, it is generally improper to interpret claim language so to render the claimed subject matter inoperable. *Carl Zeiss Stiftung v. Renishaw PLC*, 945 F.2d 1173, 1180 (Fed. Cir. 1991). Terms and phrases used in a claim are reasonably read in a manner consistent with each other. Terms in a claim should not be deemed superfluous. Claims need only “reasonably apprise those skilled in the art” of their scope and be “as precise as the subject matter permits.” *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385 (Fed. Cir. 1986).

The PTO has read Applicant’s claim language in a manner which is both unreasonable and inconsistent with the supporting specification. The rejection under 35 U.S.C. 112, 2nd ¶, reasonably should be withdrawn.

Rejection of Claims 1, 4-15, and 21 under 35 U.S.C. 112, 1st ¶

Claims 1 and 21 and all claims dependent thereon stand rejected for noncompliance with the written description requirement of 35 U.S.C 112, 1st ¶. In short, the PTO finds that the subject matter defined by Claims 1 and 21 is not described in the original specification.

First, the PTO finds that not having a peak within the range of from 7.3° to 9.4° is not described in the Specification. To the contrary, Synthesis Example 1 (Spec., pp. 83-84), Figure 9, and Table 1 (Spec., p. 90) show no peaks within the range of from 7.3° to 9.4°, i.e., between the peaks at 7.3° and 9.4°. As for the upper limit, the Specification teaches (Spec., pp. 44-45) crystal conversion of amorphous titanyl phthalocyanine (hereafter TP) to TP crystals “having neither a peak within a range from 7.4° to 9.4° nor a peak at 26.3°” (emphasis added). As for the lower limit, Table 1 (Spec., p. 90) for Synthesis Example 1 reports a minimum angle peak at 7.3°, main peaks at 9.4° and 9.6°, and no peak “within a range of 7.4 to 9.3°”. The data reported in Table 1, however, is taken directly from Figure 9. “Fig. 9 illustrates an X-ray diffraction spectrum of titanyl phthalocyanine crystals obtained in

Synthesis Example 1” (Spec., p. 17). From the combination of information presented in Applicant’s Table 1 and the X-ray diffraction spectrum of TP crystals obtained in Synthesis Example 1 as depicted in Figure 9, it would have been apparent to any person having ordinary skill in the art that Applicant’s preferred TP crystals have no “peak within a range of from 7.3° to 9.4°” (Fig. 9). That the Specification does not expressly state “not having a peak within a range of from 7.3° to 9.4°” does not suggest that persons having ordinary skill in the art would have understood that TP crystals with the X-ray diffraction spectrum depicted in Applicant’s Figure 9 are not described, are described as not having a peak within a range of from 7.3° to 9.4°, and would not have been in Applicant’s possession at the time the Application was filed. In short, persons having ordinary skill in the art would have understood from Applicant’s examples, Table 1, and Figure 9 that Applicant invented the subject matter defined by Claims 1 and 21 and all claims dependent thereon.

The PTO has not satisfied its initial burden to explain why Applicant’s claims are not reasonably described in the written Specification and Figure 9 as required under 35 U.S.C. 112, 1st ¶. The PTO’s rejection should be withdrawn.

Second, the PTO finds that Applicant’s Specification does not describe an “average particle diameter of 0.3 μm or less” because the “average particle diameter of 0.3 μm or less includes an average particle diameter of 0.3 μm ” (OA, p. 7). The PTO finds that the Applicant’s Specification only describes “an average particle diameter of less than 0.3 μm ” (OA, p. 7). However, the effective pore size of Applicant’s filter is “3 μm or less” (Spec., p. 51). Because Applicant’s Specification expressly states that the dispersion contains TP crystals having a small primary particle diameter of “less than 0.3 μm . . . preferably 0.25 μm or less, more preferably 0.2 μm or less” (Spec., pp. 46, 48, 51, and 57), currently amended Claim 1 and new Claim 22 are limited to an average particle diameter of “less than 0.3 μm ”

and previously presented dependent Claim 3 has been canceled. Accordingly, the PTO's finding that the Specification does not describe an average particle size of 0.3 μm is moot.

Third, the PTO finds that previously presented Claim 21 obtains TP crystals by a method broader in scope than the method the original Specification more specifically describes (OA, pp. 7-9). The PTO finds that the method of obtaining TP crystals described in the Specification does so (1) without drying the amorphous TP (OA, p. 8), (2) by forming an aqueous paste of the amorphous TP having a solids content of 5-15 wt% (OA, pp. 8-9), (3) by using a large amount of reaction terminating solvent as soon as conversion is complete (OA, p. 9), (4) by filtering immediately after complete conversion (OA, p. 9), and (5) by filtering before the particles grow to an average particle diameter of more than 0.3 μm (OA, pp. 9-10).

A specification may adequately support claimed subject matter even though the claims do not include all the elements the specification specifically describes if the additional elements the specification describes are not necessary or essential to the invention claimed. *In re Peters*, 723 F.2d 891, 894 (Fed. Cir. 1983). Claims which omit essential elements or critical features of the invention do not satisfy the written description requirement of 35 U.S.C. 112, 1st ¶. *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed. Cir. 1998); *In re Sus*, 306 F.2d 494, 504 (CCPA 1962).

However, the PTO has the initial burden of proof to support a rejection of an applicant's claims under 35 U.S.C. 112, first ¶. Where, as here, the Specification contains a teaching of the manner and process of making and using the invention in terms corresponding in scope with those of the claims, the disclosure must be taken as in compliance with the first paragraph of 35 U.S.C. § 112. *In re Marzocchi*, 439 F.2d 220, 223-224 (CCPA 1971). It is incumbent upon anyone asserting noncompliance to back up her assertions with acceptable evidence and reasoning. *Id.* Similarly, the PTO's doubts must be reasonably supported by the evidence of record. *In re Fouche*, 439 F.2d 1237, 1242-1243 (CCPA 1971).

In this case the PTO finds that Applicant's Specification describes a TP crystal conversion process which includes some elements not included in Applicant's claims. However, the PTO's finding that Applicant's claims describe a method for obtaining TP crystals from amorphous TP which does not include certain elements Applicant's Specification discloses does not satisfy the PTO's initial burden to establish that the elements of the method missing from the claimed invention are essential or necessary to the invention Applicant claims. Mere allegations that Applicant's claims are not described in the manner described in the supporting Specification without evidence are not sufficient to sustain a rejection under 35 U.S.C. 112, 1st ¶. Accordingly, the PTO's rejection should be withdrawn.

Objection to Claim 2 for improper dependency

Previously presented Claim 2 is objected to for improper dependency upon Claim 1 (OA, ¶10). Claim 2 has been canceled. The objection to Claim 2 should be moot.

Claim for benefit under 35 U.S.C. 119

The PTO has not shown that the full scope of the inventions defined by pending Claims 1, 3-15, 21, and 22 are not described and fully enabled by Japanese Patent Application 2002-263941, filed on September 10, 2002 (a certified English translation of the priority document has been filed in the PTO). Without evidence showing and/or an explanation why Applicant's previously presented Claims 1, 4-15 and 21, and new Claim 22, are not supported by the Japanese priority document, Applicant's claim for benefit under 35 U.S.C. 119 should be granted.

Rejections under 35 U.S.C. 103

Previously presented Claims 1, 4-15, and 21 stand rejected under 35 U.S.C. 103 over Niimi'295 or Niimi'633 in view of (1) Applicant's alleged "admission 2" in the Specification at page 3, line 10, to page 4, line 10; (2) JP'538; (3) Ladd; (4) Hashimoto (U.S. 5,776,650, issued July 7, 1998); and (5) Sakai (US 2001/0022343, published September

2001)(OA, pp. 11-24 (Niimi'295); OA, pp. 24-33 (Niimi'633)). While the PTO applies the rejections alternatively over Niimi'295 or Niimi'633, the alternatively applied disclosures (hereafter Niimi) are relied upon by the PTO for substantially the same teachings and identified as having substantially the same deficiencies. Accordingly, Applicant's shall respond to the acknowledged deficiencies of the primary references and explain why the combined prior art reasonably would not have led persons having ordinary skill in the art to remedy those deficiencies and achieve the subject matter Applicant claims.

The PTO acknowledges (OA, pp. 13-14/26), "Niimi . . . does not exemplify the use of . . . [TP] crystals having an average particle diameter as recited in . . . claims 1, 3, and 21."

Nevertheless, the PTO finds (OA, p. 14/26):

[T]he Niimi . . . charge generation layer comprises . . . [TP] crystals dispersed in a polyvinylbutral binder resin, where the . . . [TP] crystals exhibit an X-ray diffraction pattern having a maximum peak at . . . 27.2° . . . Niimi . . . teaches that the charge generation layer is prepared by mixing the charge generation material with a . . . solvent and binder resin and dispersing the mixture with "a ball mill . . .".

It is not only apparent from the disclosures that Niimi does not suggest using TP crystals having an average particle diameter of less than 0.3 μm as Applicant's Claims 1, 21, and 22 require, but it is also apparent that Niimi is not concerned with applied stress and crystalline form conversion when dispersing a TP crystal mixture with a ball mill and the final crystalline morphology of the TP crystals in a charge generation layer. Niimi's lack of concern is evident from the fact that Niimi does not mention peak(s) or a lack thereof within the range of from 7.3° to 9.4°, at 9.4°, at 9.6°, and at 26.3° of the X-ray diffraction pattern. Applicant's Specification and claims identify "not having a peak within a range of from 7.3° to 9.4° and at 26.3°" as indicative of the fact that the TP crystal particles contained in the charge generation layer have not been subjected to stress which alters the crystalline morphology of the TP crystals and reduces the functional characteristics and image quality of an electrophotographic apparatus wherein the charge generation layer contains TP crystals.

Applicant emphasizes that Niimi does not recognize the problem to which Applicant's solution and invention are directed.

While the PTO relies on Hashimoto's teaching to supply the deficiencies in Niimi's teaching, Hashimoto teaches that dispersions of dyes and/or pigments for use in forming charge generation layers for electrophotographic apparatus with improved stability and productivity are prepared by dispersing dyes and/or pigments in a solvent and ball-pulverizing the dispersions to an average particle size of about 0.1 to about 0.3 μm (Hashimoto; Abstract, Claim 1, col. 3, l. 2, to col. 5, l. 10, and col. 2, ll. 40-46). The PTO not only relies on Hashimoto for its teaching to ball-pulverize the dye and/or pigment of a charge generation layer to a size less than 0.3 μm , but also for its suggestion that the dye and/or pigment is not specifically limited and may be "such as phthalocyanine pigments" (Hashimoto, col. 4, ll. 45-52)(OA, pp. 14-15; pp.26-27).

Applicant notes that Hashimoto does not disclose or exemplify any phthalocyanine pigment having an average particle size of less than 0.3 μm and does not suggest the preparation of phthalocyanine pigment having an average particle size of less than 0.3 μm by any method other than dispersing and pulverizing with ball-shaped pulverizing media. Accordingly, Hashimoto's method of decreasing the average particle size by dispersing and ball-pulverizing any dye or pigment, including such as phthalocyanine pigments, with ball-shaped pulverizing media does not recognize that TP crystals have unstable crystalline morphology, does not recognize that the particular crystalline morphology of the TP crystals forming the charge generation layer of an electrophotographic apparatus is important for improved productivity of the apparatus, does not recognize that the crystalline morphology of the TP crystals used to form the charge generation layer converts when subjected to stresses such as ball-milling or ball-pulverization, and does not recognize that changes in the crystalline morphology of TP crystals used to prepare the charge generation layer of an

electrophotographic apparatus detrimentally affects its operational characteristics and image production. In general, Hashimoto neither recognizes the problem Applicant faced nor understands that its ball-pulverizing method of reducing the average particle size of dispersed dyes and/or pigments generally creates the problem Applicant's invention was designed to alleviate.

Without considering Niimi and Hashimoto for everything they teach, including the dearth of knowledge, information, and understanding regarding the morphology of TP crystals and its stability in each, the PTO summarily concludes (OA, pp. 15-16 and p. 27):

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Niimi . . . and Hashimoto, to prepare a charge generation dispersion coating solution comprising the Niimi . . . [TP] and polyvinylbutyral resin used in . . . Niimi . . . as taught by Hashimoto . . . such that the resultant dispersion solution comprises . . . [TP] pigment dispersoids having an average particle size of about 0.1 to 0.3 μm

The PTO finds that the person having ordinary skill in the art "would have had a reasonable expectation of successfully obtaining an image forming apparatus that has improved stability and excellent photoconductive properties as taught by Hashimoto" (OA, pp. 16 and 27). However, that finding is not material to patentability of the invention Applicant claims.

The basic problem with the PTO's findings and conclusions is that the electrophotographic apparatus which would be formed by combining Niimi and Hashimoto in the manner the PTO suggests would not be the invention Applicant claims. Hashimoto's dispersing and ball-pulverizing method for reducing the size of Niimi's TP crystals reasonably would be expected to alter the crystalline morphology of the TP crystals during formation from TP crystals having an X-Ray diffraction pattern not having a peak within a range of from 7.3° to 9.4° and at 26.3° to TP crystals having an X-Ray diffraction pattern with a peak within a range of from 7.3° to 9.4° or at 26.3°.

However, the PTO argues that TP crystals produced in the manner taught by Hashimoto reasonably appear to be the same or substantially the same as those defined in

Applicant's claims. Therefore, the PTO requires Applicant to show some difference. The showing the PTO requires is found in the originally filed Specification.

In Applicant's Table 1 (Spec., p. 90), Applicant provides X-Ray diffraction pattern data for Synthesis Examples 1-7 (Spec., pp. 83-90). Synthesis Example 1 was prepared by the method of Claims 1, 21, and 22 whereby a dispersion of TP crystals are filtered to size (Spec., pp. 83-84). The X-Ray diffraction pattern for the TP crystals filtered as per Synthesis Example 1 is shown in Figure 9. The PTO will find in Figure 9 peaks at 7.3° and 9.4° but no peak within the range of from 7.3° to 9.4° and at 26.3°.

According to Synthesis Example 2 (Spec., pp. 85-86), the TP crystals of Synthesis Example 1 were dispersed in PEG and subjected to a sand mill treatment employing glass beads. The process produced TP crystals with a different crystalline morphology, as evidenced by no peaks at 9.4° or 9.6° (Spec., p. 90, Table 1). In Synthesis Example 3 (Spec., p. 86), the TP crystals of Synthesis Example 1 were dispersed in a mixed solvent of water and monochlorobenzene and heated to 50°C. The X-Ray diffraction pattern of the resultant TP crystals showed a minimum angle peak at 9.6° (Spec., p. 90, Table 1). In Synthesis Example 4, TP crystals were prepared by a method disclosed in Japanese Patent Application Publication 07-91486 including hot filtration at 130°C and multiple washings. The X-Ray diffraction pattern of the resultant TP crystals showed a minimum angle peak at 7.4° and no peak at 9.4 (Spec., p. 90, Table 1). In Synthesis Example 5 (Spec., pp. 87-88), the TP crystals were prepared by a method disclosed in Japanese Patent Application Publication 07-97221 including sand grinding. The X-Ray diffraction pattern of the resultant TP crystals showed a peak at 7.5° (Spec., p. 90, Table 1). In Synthesis Example 6 (Spec., pp. 88-89), the TP crystals were prepared by a method disclosed in Japanese Patent 30033664 including high speed stirring for one hour and filtration. The X-Ray diffraction pattern of the resultant TP crystals showed a peak at 7.5° (Spec., p. 90, Table 1). In Synthesis Example 7 (Spec, p. 89),

the TP crystals of Synthesis Example 1 were mixed with sodium chloride and diethylene glycol, subjected to mill treatment at 80°C for 60 hours, and sand milled with beads for 30 minutes. The X-Ray diffraction pattern of the resultant TP crystals showed a minimum angle peak at 7.4°, no peaks at 9.4° and 9.6°, and peaks at 9.2° and 26.3° (Spec., p. 90, Table 1).

Needless to say, the evidence shows that TP crystals prepared in accordance with either Niimi's ball milling process or Hashimoto's ball-pulverizing process would not be reasonably expected to show the X-Ray diffraction pattern limitations required by Applicant's Claims 1, 21, and 22.

In Synthesis Example 8 (Spec., pp. 90-92), TP crystals again were collected by filtration and neutralized by repeated washing with water to form a paste of TP pigment (Spec., p. 91). A mixture of the aqueous paste and added THF was stirred until the color of the paste change from dark to pale blue. The resulting TP crystals were filtered and dried (Spec., pp. 91-92). The X-Ray diffraction pattern of the resultant TP crystals was equal to that for Synthesis Example 1 (Spec., p. 92), i.e., Figure 9.

Applicant's Specification also provides comparative operational characteristics. Applicant's Manufacturing Examples 1-7, which employ Synthesis Examples 1-7 respectively (Spec., pp 92-98), indicate that Manufacturing Example 1, which employs the TP crystals prepared in accordance with Synthesis Example 1, produces a better electrophotographic product than Manufacturing Examples 2-7 (Spec., p. 98, Table 2).

Finally, in Synthesis Example 9, TP crystals were prepared in a manner similar to Synthesis Example 1 and subjected to crystalline morphology conversion (Spec., p. 120). As shown in Figure 10, the converted TP crystal showed an X-Ray diffraction pattern distinct from that of Figure 9 with a lowest angle peak at 7.5° rather than at 7.3° as in Figure 9 (Spec., p. 120). To the TP crystals of Synthesis Example 1 and Synthesis Example 9, Applicant added a TP crystal prepared in accordance with Japanese Patent Application Laid-Open 61-

239248 prepared by mixing the TP crystals in a mortar (Spec., pp. 120-122). Figures 11 and 12 establish that the converted crystals, unlike the unconverted TP crystals prepared by Synthesis Example 1 with the X-Ray diffraction pattern spectrum shown in Figure 9, show a lower angle peak at 7.5°. Figure 9 shows a lower angle peak at 7.3° but no peak at 7.5°.

The evidence in Applicant's Specification, considered as a whole, reasonably shows that the combined teachings of Niimi and Hashimoto would not have obviously or inherently led to production of the TP crystals identified in Applicant's Claims 1, 21, and 22. Moreover, the evidence in Applicant's Specification shows that electrophotographic apparatus employing the TP crystals with an average particle size of less than 0.3 µm identified in Applicant's Claims 1, 21, and 22 show improved electrophotographic operational characteristics when compared to electrophotographic apparatus employing converted TP crystals with an average particle size of less than 0.3 µm prepared by methods disclosed in Niimi and Hashimoto.

Applicant has rebutted the PTO's alleged prima facie case of obviousness based on the inherent identity of TP crystals prepared by the method suggested by Niimi and Hashimoto. Accordingly, Applicant's claims should be allowed thereover.

The PTO argues further that JP''538 describes TP crystals showing the X-Ray diffraction pattern peaks and absence of peaks identified in Applicant's Claims 1, 21, and 22. The PTO misses the point. Applicant is not claiming TP crystals showing the X-Ray diffraction pattern peaks and absence of peaks identified in Applicant's Claims 1, 21, and 22 and is not claiming electrophotographic apparatus utilizing those TP crystals as the charge generation layer. Nor is Applicant arguing or admitting that TP crystals showing the X-Ray diffraction pattern peaks and absence of peaks identified in Applicant's Claims 1, 21, and 22 are new. Applicant's claims are directed to an electrophotographic apparatus with a charge generation layer containing TP crystals having an average particle diameter of less than 0.3

μm which show the X-Ray diffraction pattern peaks and absence of peaks identified in Applicant's Claims 1, 21, and 22. Persons having ordinary skill in the art could not have prepared or reasonably expected to prepare TP crystals having an average particle diameter of less than 0.3 μm which show the X-Ray diffraction pattern peaks and absence of peaks identified in Applicant's Claims 1, 21, and 22 for use as the charge generation layer of an electrophotographic apparatus in view of the combined teachings of Niimi, Hashimoto, and JP'538. Applicant's Specification shows that conventional prior art methods for reducing the size of TP crystals which employ ball-milling, ball-pulverizing, high shear stirring, and heating do not inherently result in the TP crystals identified in Applicant's claims. Applicant was first to recognize the TP crystal conversion problem and first to solve the problem by conventional filtering. Nothing in the prior art reasonably would have led persons having ordinary skill in the art to the invention Applicant claims.

Neither the teachings of Sakai, Ladd, and Tokutake (U.S. 6,120,955) nor any admissions in Applicant's Specification remedy the deficient disclosures of Niimi, Hashimoto, and JP'538. The PTO's reliance upon impermissible hindsight to reconstruct Applicant's claims is evident and should be recognized for what it is - impermissible. The PTO should pass Applicant's claims to issue.

Provisional rejections of claims for obviousness-type double patenting

The PTO provisionally rejected all of Applicant's pending claims for obviousness-type double patenting in view of subject matter claimed but not allowed in commonly assigned copending Application 10/606,750, as evidenced by "admission 2", JP'538, and Ladd, in view of Sakai (OA, ¶19, pp. 41-47).

Applicant respectfully requests that the obviousness-type double patenting rejection over the above-mentioned co-pending application be suspended until allowable subject matter in this application or Application 10/606,750 has been indicated. If necessary in view of

claimed subject matter which has been allowed in a patent issuing from copending Application 10/606,750 before claims pending in this application are allowed, a terminal disclaimer will be filed. Until such time, Applicant cannot properly or fairly conclude that a terminal disclaimer is in order.¹

At this time, no claim in the present application or in copending Application 10/606,750 has been indicated by an examiner to be allowable but for a provisional obviousness-type double patenting rejection. Where a provisional ODP rejection is applicable in each of two copending applications over the claims in the other and the ODP rejection is the only rejection remaining in one of those copending applications, the examiner may withdraw the ODP rejection of claims in the first application to issue without a terminal disclaimer. See MPEP §804. Although the present application is not the earlier filed application, if the claims in this application are otherwise in condition for allowance before the claims in 10/606,750 are in condition for allowance, the obviousness-type double patenting rejection may and should be withdrawn.

¹ If the Examiner finds pending claims allowable but for the requirement of a Terminal Disclaimer, she is respectfully requested to contact the below-signed attorney by telephone, who will expedite the allowance of this case.

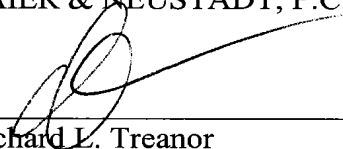
Application No. 10/656,280

Reply to Office Action of November 26, 2008

For the reasons stated herein, Claims 1, 4-15, 21, and 22 of this application are in condition for allowance. Early notification of allowance of Applicant's claims is solicited.

Respectfully submitted,

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